

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the application.

1- 20. **(Canceled)**

21. **(Previously Presented)** A repeater for receiving and retransmitting digital data, the repeater comprising:

a receiver adapted to receive a data signal;

a signal processor coupled to the receiver, the signal processor being adapted to perform processing tasks on the data signal;

a transmitter coupled to the signal processor, the transmitter adapted to receive the data signal from the processor and to transmit the data signal; and

out-of-band logic coupled to the signal processor, the out-of-band logic configured to extract and insert out-of-band data onto the data signal, wherein the out-of-band logic is configured to:

extract out-of-band data from the data signal, wherein the out-of-band data includes digital diagnostic data from at least one remote repeater;

concatenate data corresponding to digital diagnostic data for the repeater to the out-of-band data such that the out-of-band data includes the digital diagnostic data for the repeater and the at least one remote repeater; and

insert the out-of-band data including the data corresponding to digital diagnostic data for the repeater and the at least one remote repeater onto the data signal.

22. **(Canceled)**

23. **(Original)** The repeater of claim 21, wherein the out-of-band logic is a microprocessor.

24. – 25. **(Canceled)**

26. **(New)** The repeater of claim 21, further comprising:
 an additional receiver coupled to the signal processor and to the out-of-band logic, the additional receiver being adapted to receive an additional data signal; and
 an additional transmitter coupled to the signal processor and to the out-of-band logic, the additional transmitter adapted to receive the additional data signal from the processor and to transmit the additional data signal.
27. **(New)** The repeater of claim 26, wherein the transmitter and the additional transmitter transmit the data signal and additional data signal, respectively, in opposite directions.
28. **(New)** The repeater of claim 21, wherein the out-of-band data includes identification and/or authentication information.
29. **(New)** The repeater of claim 21, wherein the digital diagnostic information includes information concerning another repeater and/or an optical link associated with the repeater.
30. **(New)** The repeater of claim 21, wherein the processing tasks include one or more of removing noise, and boosting signal power.
31. **(New)** The repeater of claim 21, wherein the repeater includes a hardware embedded encryption key, and the out-of-band data includes identification and/or authentication information.
32. **(New)** The repeater of claim 21, wherein the signal processor and the out-of-band logic are connected in parallel between the transmitter and the receiver.
33. **(New)** A network that includes an additional repeater coupled to the repeater of claim 21.

34. **(New)** The repeater of claim 21, wherein the digital diagnostic information includes configuration information.

35. **(New)** The repeater of claim 34, wherein the configuration information includes one or more of a data communication rate, and information concerning transmitter power.

36. **(New)** The repeater of claim 21, wherein the repeater is adapted to determine its compatibility with another device of a network by requesting identification information from that device.

37. **(New)** The repeater of claim 36, wherein the identification information comprises information concerning a manufacturer of the device.

38. **(New)** The repeater of claim 21, wherein the out-of-band data includes information about optical loss of an optical link associated with the repeater.